Thursday, November 6, 2014
PLENARY SESSION III
9:00 a.m. / Building 34 -Conference Room W150

Chairs: **P. Mahaffy (*GSFC)***
X. Sun *(GSFC)*

9:00 a.m. Elphic R. C. * Hine B. P. Delory G. T. Noble S. Colaprete A. et al.
Lunar Science On A ShoeString: The Adventures of LADEE **[#1164]**
NASA's Lunar Atmosphere and Dust Environment Explorer (LADEE) arrived at the Moon on Oct 6, 2013. It demonstrated many firsts: deep-space demonstration of high-speed laser communications; acquisition of all necessary science data in 100 days etc.

Thursday, November 6, 2014
INSTRUMENTATION FOR IN-SITU ANALYSIS MISSIONS
9:30 a.m. / Building 34 -Conference Room W150

Chairs: **P. Mahaffy *(GSFC)***
L. Carter *(GSFC)*

9:30 a.m. Nagihara S. * Zacny K. Hedlund M. Taylor P. T.
Compact, Modular Heat Flow Probe for the Lunar Geophysical Network Mission **[#1011]**
We report our progress in designing and testing prototypes of a low-mass, low-power heat flow probe for possible use in the Lunar Geophysical Network and other missions to the Moon.

9:45 a.m. Cohen B. A. * Devismes D. Miller J. S. Swindle T. D.
The Potassium-Argon Laser Experiment (KArLE): In Situ Geochronology for Planetary Robotic Missions **[#1040]**
We are developing an in situ geochronology capability using flight-heritage components. KArLE results show that for planetary samples older than 2 Ga, precision will be ±100 Ma, sufficient to address a wide range of high-priority science.

10:00 a.m. Stockton A. M. * Kim J. Willis P. A. Lillis R. Amundson R. et al.
The Mars Organic Analyzer: Instrumentation and Methods for Detecting Trace Organic Molecules on Mars and Elsewhere in our Solar System **[#1045]**
Mars Organic Analyzer was designed to give the Mars 2020 Mission capability to look for organic molecules, including amines, aldehydes, ketones, organic acids, thiols and polycyclic aromatic hydrocarbons, in martian samples with sub-ppb sensitivity.

10:15 a.m. Ehlmann B. L. * Mouroulis P. Van Gorp B. Blaney D. Rodriguez J. et al.
Microimaging VSWIR Spectroscopy Instruments for Planetary Exploration: Measuring In-Situ Mineralogy, Ices, Organics, and Linking to Remote Observation **[#1046]**
In situ microimaging VSWIR spectroscopy to assess mineralogy and texture simultaneously with no surface prep, rapid measurement (<10min scan for 140,000 discrete measurements), and high sensitivity to minerals has been demonstrated with a prototype.

10:30 a.m. Willis P. A. * Mora M. F. Cable M. L. Stockton A. M. Williford K. H. et al.
Microfluidic Life Analyzer (MILA) **[#1047]**
MILA is a newly initiated planetary instrument development effort funded under the NASA-PICASSO Program aimed at the analysis of organic acids. Key measurement capabilities include amino acid chirality and carboxylic acid chain length up to 30 atoms.

10:45 a.m. Peplowski P. N. * Goldsten J. O. Lawrence D. J.
COUGRS: A Low-Resouce Gamma-Ray Spectrometer for Surface Science Investigations into Planetary Origins and Evolution **[#1061]**
We present a new, lightweight, low-resource gamma-ray spectrometer capable of making high-quality geochemical measurements on future planetary landers.

11:00 a.m. **COFFEE BREAK**

11:20 a.m. Wang Alian. * Jolliff B. L. Lambert J. L. Menzies R. Hutchinson I. et al.
A Compact Integrated Raman Spectrometer, CIRS, for Fine-Scale Mineralogy and Bio-Signature Detection in Planetary Surface Explorations of Our Solar System. **[#1090]**
CIRS is a non-optical-fiber version of MMRS, with augmented science capabilities. It combines a high-quality laser Raman spectrometer (CIRS-LRS) with a Context Imager (CIRS-CI). CIRS development enables broad applications for future missions.

11:35 a.m. Beauchamp P. M. * Hörst S. M. Yelle R. V. Cable M. L. Neidholdt E. L. et al.
Planetary Organics Detector (POD): A High Resolution Mass Spectrometer System To Determine Composition And Structure **[#1129]**
POD has high resolution tandem mass spectrometers and a cryogenic sample handling system for analyzing gas, liquid, and solid samples to distinguish between structural isomers and isobars, molecular formulas and ions that have the same nominal mass.

11:50 a.m. Blaney D. L. * Murchie S. L. Green R. O. Mustard J. Ehlman B. et al.
Ultra Compact Imanging Spectrometer (UCIS): Technology Maturaion and Applications for Mars, the Moon, and Small bodies. **[#1148]**
The Ultra Compact Imaging Spectrometer (UCIS) is the first imaging spectrometer compatible with being put on the mast of a lander or rover that has been built using flight-proven components and can collect data on the Moon, asteroids, or Mars.

12:05 p.m. Southard A. E. * Ferrance J. Elsila J. E. Espiritu A. M. Kotecki C. et al.
Liquid Chromatography-Mass Spectrometry Interface for detection of extraterrestrial organics **[#1155]**
The OASIS (Organics Analyzer for Sampling Icy surfaces) is being developed to do in situ detection of the organic content of icy bodies in the solar system using liquid chromatography-mass spectrometry.

12:20 p.m. **LUNCH BREAK**

Thursday, November 6, 2014
INSTRUMENTATION FOR NEXT GENERATION ORBITERS (IV)
9:30 a.m. / Building 34- Conference Room W120 A&B

Chairs: **M. Grande *(Aberystwyth U., UK)***
X. Sun *(GSFC)*

9:30 a.m. Tamppari L. K. * Spiers G.
A Doppler Wind LIDAR for Mars **[#1127]**
The winds on Mars are almost completely unknown, yet are critical for understanding fundamental processes on Mars, and ensuring safe landing of robotic and human spacecraft. We are developing a Doppler LIDAR for Mars to be flown from orbit.

9:45 a.m. Asmar S. W. * Iess L. Folkner W. M. Simone L. Bolton S. J.
Advanced Radio Science Instrumentation for the Juno, BepiColombo, and JUICE Missions **[#1130]**
Planetary interior structures are constrained via gravitational field recovery. Radio Science techniques have utilized Doppler tracking. Beyond X-band links, we have introduced Ka-band radios and improved data quality by an order of magnitude.

10:00 a.m. James D. * Kemph S. Passe H. Sternovsky Z. Young J. et al.
Development and Characterization of a New Dynode Multiplier for Missions to Harsh Radiation Environments **[#1138]**
An electron multiplier and its housing are being developed for the SUrface Dust Analyzer instrument proposed on NASA's planned Europa mission. This talk presents the results of design, modeling, and testing in preparation for the harsh environment.

10:15 a.m. Jones S. M. * Anderson M. S. Davies A. G. Kirby J. P.
Aerogel Dust Capture for In-Situ Mass Spectrometry Analysis **[#1143]**
To demonstrate that aerogel dust capture can be used to complement current methods of sample collection for in-situ mass spectrometry (MS), impact tests and analyses with MS were conducted. PAHs were identified from the dust captured in aerogel.

10:30 a.m. Kempf S. * Altobelli N. Brios C. Grün E. Hand K. et al.
SUDA: A Dust Mass Spectrometer for Compositional Surface Mapping for a Mission to Europa **[#1152]**
SUDA is an impact mass spectrometer, which measures the composition of ballistic dust particles from Europa's surface. The unique compositional data enables SUDA to define and constrain the geological activities on and below the moons' surface.

10:45 a.m. Sandor-Leahy S. * Miller H. Logan J. Flannery M. Folkman M.
Compact Thermal Imaging Spectrometer for Planetary Science Applications **[#1159]**
NGAS has developed a novel, compact, low weight and power, hyperspectral imaging spectrometer , which has key features that make it particularly suitable for planetary science and uses a compact optical design resulting in a single compact instrument package.

11:00 a.m. **COFFEE BREAK**

11:20 a.m. Gautam N. Sherwin M. S. * Kawamura J. Karasik B. Focardi P. et al.
A Heterodyne Detector for Terahertz Spectroscopy of Planets and Comets. **[#1160]**
Between 1 and 5 THz, molecular lines in cometary and planetary atmospheres are dense and strong. We discuss the development of a frequency-agile, nearly quantum-limited, heterodyne receiver for 1-5 THZ that can be passively cooled.

Thursday, November 6, 2014
INTERPLANETARY LASER RANGING AND COMMUNICATIONS
11:35 a.m. / Building 34- Conference Room W120 A&B

Chairs: **M. Grande *(Aberystwyth U., UK)***
X. Sun *(GSFC)*

11:35 a.m. Cornwell D. M. *
NASA's Optical Communications Program for Future Planetary and Near-Earth Missions **[#1010]**
An overview of NASA's vibrant and wide-ranging optical communications program to support future planetary and near-Earth missions will be provided, based on the success of the laser communications demonstration from the Moon on LADEE in 2013.

11:55 a.m. Dell'Angnello S. *
NASA-SSERVI and INFN Partnership "SPRINGLETS":Solar system Payloads of laser Retroreflectors of INfn for General reLativity,Exploration and planeTary Science **[#1163]**
A research partnership between INFN and NASA-SSERVI, the NASA Solar System Exploration and Research Virtual Institute, to provide new generation laser retroreflectors for precise positioning of the Moon, Mars and the icy/rocky moons of Jupiter and Saturn.

12:10 p.m. **END OF SESSION**
LUNCH BREAK

Thursday, November 6, 2014
MARS 2020 MISSION AND INSTRUMENTS
1:20 p.m. / Building 34 -Conference Room W150

Chairs: **A. Bhardwaj *(VSSC, India)***
T. Stubbs (GSFC)

1:20 p.m. Farley K. A. * Schulte M. D. Williford K. H.
Overview of the Mars 2020 Mission and its Investigation Payload **[#1133]**
An overview of the investigations selected for the Mars 2020 rover mission.

1:40 p.m. Allwood A. C. * Clark B. Elam W. T. Flannery D. T. Grotzinger J. et al.
PIXL: Planetary Instrument for X-ray Lithochemistry on Mars 2020 **[#1104]**
PIXL is a microfocus XRF instrument on the robotic arm of the Mars 2020 rover. PIXL will be used to investigate abundances and submillimeter-scale distribution of chemical elements in rocks and soils.

2:00 p.m. Hamran S.-E. * Amundsen H. E. F. Carter L. Ghent R. Kohler J. et al.
The Ground Penetrating Radar RIMFAX on the Mars 2020 Mission. **[#1034]**
The Radar Imager for Mars' sub-surFAce eXperiment (RIMFAX) ground penetrating radar experiment for the Mars 2020 Rover will add a new dimension to the rover's toolset by providing the capability to image the shallow subsurface beneath the rover.

2:20 p.m. Wiens R. C. * Maurice S. Johnson J. R. Clegg S. M. Sharma S. K. et al.
The SuperCam Remote Sensing Suite for Mars 2020: Co-Aligned LIBS, Raman, and Near-IR Spectroscopies, and Color Micro-Imaging **[#1086]**
SuperCam/Mars2020 is a suite of 4 instruments: Laser Induced Breakdown Spectroscopy (LIBS), Raman spectros-copy, visible and near-infrared spectroscopy (VISIR), and high resolution color imaging, all co-aligned and at micro-radian angular resolution.

2:40 p.m. Bell J. F. III * Maki J. N. Mehall G. L. Ravine M. A. Caplinger M. A.
Mastcam-Z: A Geologic, Stereoscopic, and Multispectral Investigation on the NASA Mars-2020 Rover **[#1151]**
Here we describe the mast-mounted Mastcam-Z imaging system on the Mars-2020 rover. We describe our geologic, atmospheric, and operational science goals, as well as the basic functionality and predicted performance of the cameras.

3:00 p.m. Beegle L. W. * Bhartia R. DeFlores L. White M. Asher S. et al.
SHERLOC: Scanning Habitable Environments with Raman & Luminescence for Organics & Chemicals, an Investigation for 2020 **[#1078]**
The SHERLOC investigation was recently selected for the Mars 2020 integrated payload. SHERLOC enables non-contact, spatially resolved, and highly sensitivity detection and characterization of organics and minerals on Mars.

3:20 p.m. Hecht M. H. * Rapp D. R. Hoffman J. A. The MOXIE TEAM
The Mars Oxygen ISRU Experiment (MOXIE) **[#1134]**
Recently selected to fly on NASA's Mars 2020 mission, MOXIE is a 1% scale model of an oxygen processing plant that might support a human expedition sometime in the 2030s. MOXIE will produce 22g/hr of O2 on Mars with >99.6% purity during 50 sols.

3:40 p.m. **END OF ORAL SESSION**
GSFC TOURS

Thursday, November 6, 2014
GSFC Tours
3:55 p.m.

3:55 p.m.	*Group A: Bus departs from Building 34 for Visitor Center, then returns to Building 34 for Group B*
4:00 p.m.	*Group A:*The Astrobiology Walk at the Visitor Center Garden, Visitor Center
	Group B: Bus departs from Building 34 for Building 29, then returns to Visitor Center for Group A
4:10 p.m.	*Group B:* James Webb Space Telescope Space Systems Development and Integration Facility Clean Room and Building 29
4:30 p.m.	*Group A: Bus returns to Visitor Center for Group A, takes VIPs to Building 29 and picks up Group B to take to Visitor Center*
4:40 p.m.	*Group A:* James Webb Space Telescope Space Systems Development and Integration Facility Clean Room and Building 29
	Group B: Bus departs from Building 29, for the Visitor Center
4:50 p.m.	*Group B:* The Astrobiology Walk at the Visitor Center, Garden, and Visitor Center
5:15 p.m.	*Group A: bus picks up VIPs from Building 29, takes to Visitor Center*
	Group B: already at Visitor Center
5:20 p.m.	*Group A & B await hotel shuttles at Visitor Center, then depart center*